

navigation between this point and Saint Louis was practically suspended after this date. There was floating ice in the river on the 27th, 28th, and 30th.

Ohio River.—Cairo, Ill.: reports from Metropolis, Ill., state that the heavy floating ice interrupted navigation on the 29th; on this date the packet running between Cairo and Paducah, Ky., was compelled to discontinue trips.

Louisville, Ky.: the river was covered with thin ice on the morning of the 29th, on which date navigation was suspended for all boats except the larger steamers.

Laconia, Harrison Co., Ind.: navigation was suspended on the 30th on account of low water and floating ice in the river.

Allegheny and Monongahela rivers.—Pittsburg, Pa.: floating ice in both rivers from the 23d to the 26th and 28th, and in the Monongahela on the 30th and 31st; the Allegheny froze over on the 31st.

HIGH TIDES.

Coney Island, N. Y.: this island was swept by a northeast gale on the 28th, and the hotels and other property near the beach were badly damaged by the high tide. The beach was strewn with large quantities of timber and debris.

Long Beach, N. J.: the strong southeasterly gale on the 28th caused a very high tide which damaged property to a great extent.

High tides also occurred as follows:

Duke, Fla., 1st.; Chicamicomico, N. C., 1st to 3d; Eastport, Me., 16th; Wilmington, N. C., 17th; Atlantic City, N. J., 18th.

LOW TIDE.

Staten Island, N. Y.: an unusually low tide occurred on the 29th. "Split Rock," in the bay of Tompkinsville, L. I., which had not been seen for several years, was exposed to view.

STAGE OF WATER IN RIVERS AND HARBORS.

In the following table are shown the danger-points at the various stations and the highest and lowest depths for December, with the dates of occurrence, and the monthly ranges:

Heights of rivers above low-water mark, December, 1887 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River:						
Shreveport, La.....	29.9	24, 25	21.6	1	8.0	13.6
Arkansas River:						
Fort Smith, Ark....	22.0	4	8.8	30	1.1	7.7
Little Rock, Ark....	23.0	7	10.1	1	1.4	8.7
Missouri River:						
Omaha, Nebr.....	18.0	24, 25, 26	6.1	12, 13	2.1	4.0
Leavenworth, Kans.	20.0	5	4.1	15, 16	3.2	0.9
Mississippi River:						
Saint Paul, Minn....	14.5					
La Crosse, Wis.....	24.0					
Dubuque, Iowa.....	16.0	5, 6, 7	3.2	2	1.8	1.4
Keokuk, Iowa.....	14.0	21	1.7	3, 6	0.0	1.7
Saint Louis, Mo....	32.0	9	7.5	26, 27	0.8	6.7
Cairo, Ill.....	40.0	12, 13	8.0	31	2.0	6.0
Memphis, Tenn.....	34.0	14, 15, 16	6.0	1, 2, 31	2.6	3.4
Vicksburg, Miss....	41.0	20	5.0	2, 3	3.5	8.5
New Orleans, La....	13.0	23	2.8	1, 30	1.6	1.2
Ohio River:						
Pittsburg, Pa.....	22.0	7	6.9	30	3.8	3.1
Cincinnati, Ohio....	50.0	17	7.5	2, 3	4.3	3.2
Louisville, Ky.....	25.0	20	4.4	2, 3	3.2	1.2
Cumberland River:						
Nashville, Tenn....	40.0	27, 28	3.6	1, 2, 3	0.8	2.8
Tennessee River:						
Knoxville, Tenn....	.....	29	4.5	4	1.8	2.7
Chattanooga, Tenn.	33.0	30	5.5	2-6	1.6	3.9
Monongahela River:						
Pittsburg, Pa.....	29.0	7	6.9	30	3.8	3.1
Savannah River:						
Augusta, Ga.....	32.0	25	15.1	2-5	6.0	9.1
Sacramento River:						
Red Bluff, Cal.....	.....	29, 30	1.9	21-27	0.6	1.3
Sacramento, Cal....	.....	30	10.8	24-28	7.5	3.3
Willamette River:						
Portland, Oregon....	.....	9	10.6	24	1.6	9.0

* Frozen after 20th.

† River frozen entire month.

‡ Below bench-mark.

Nashville, Tenn.: the first steamer since the suspension of navigation on account of low water, came up the Cumberland River from the Ohio on the 10th, the depth of water shown by the Nashville gauge being two and eight-tenths feet on that date. Navigation on the lower Cumberland was resumed on the 26th, and on the upper Cumberland on the 29th.

ATMOSPHERIC ELECTRICITY.

AUORAS.

Auroras were observed during the month as follows: 6th, Cornish and Kent's Hill, Me.; North Truro, Mass.; Manitowoc, Wis. 7th and 8th, Manitowoc, Wis. 12th, Fort Totten, Fort Buford, and Webster, Dak.; Cornish, Me.; Cambridge, Mass.; Moorhead and Saint Vincent, Minn.; Poplar River, Mont. 13th, Webster, Dak.; Cornish, Eastport, and Kent's Hill, Me.; Poplar River, Mont.; Nashua, N. H.; Block Island, R. I. 14th, Egg Harbor City, N. J.; Manitowoc, Wis. 15th, Fort Buford, Dak. 16th, Bismarck, Dak.; Cornish and Kent's Hill, Me.; Moorhead and Saint Vincent, Minn.; Fort Custer and Poplar River, Mont.; Northfield, Vt. 17th, Fort Buford, Dak.; Cresco, Iowa; Duluth, Minn.; Poplar River, Mont.; Nashua, N. H. 18th, Saint Vincent, Minn. 20th, Wakefield, Kans. 21st, Webster, Dak.; Cornish, Eastport, and Kent's Hill, Me.; Blue Hill Observatory, Cambridge, and Fall River, Mass.; Moorhead and Saint Vincent, Minn.; Nashua, N. H.; Block Island, R. I.; Northfield, Vt. 22d, Blue Hill Observatory, Mass. 29th, Des Moines, Iowa.

THUNDER-STORMS.

Thunder-storms occurred as follows: Dodge City, Kans., 1st; Palestine, Tex., 3d; and Salt Lake City, Utah, 30th.

ELECTRICAL PHENOMENA.

Keeler, Cal.: on the evening of the 1st, during a light rain storm, and after the rain had ceased, the atmosphere was charged with electricity to an unusual degree, as was shown by the working of telegraph instruments. The office stove emitted electric sparks one-eighth of an inch in length.

Fort Sully, Dak.: on the 3d the telegraph wires were highly charged with atmospheric electricity; electric sparks one inch long were observed about the "cut-out" at 10 p. m.

Cheyenne, Wyo.: the presence of atmospheric electricity was very marked on the 12th; sparks one-eighth of an inch in length were produced by touching the steam heater, and all metallic surfaces or points when touched gave shocks which were quite perceptible.

MISCELLANEOUS PHENOMENA.

METEORS.

Dale Enterprise, Rockingham Co., Va.: a brilliant meteor was observed on the 11th, moving west; this vicinity was lighted up for several seconds as if by a prolonged flash of lightning.

Meteors were also observed as follows:

3d, Cleburne, Tex. 4th, Clayton, N. J. 5th, Little Rock,

Ark.; Biloxi, Miss.; Fort Stanton, N. Mex. 6th, Clayton and Egg Harbor City, N. J. 7th, Wilson, Kans.; Woodstock, Md.; Kalamazoo, Mich. 8th, Fort Buford, Dak. 9th, Savannah, Ga. 10th, Stateburg, S. C. 11th, Wilson and Yates Center, Kans.; East Portland, Oregon; Quakertown, Pa.; Stateburg, S. C.; University of Virginia, Va. 12th, Archer and Cedar Keys, Fla.; Lebo and Wilson, Kans.; Beverly, N. J.; Charlotte,